ABSTRACT

In order to study the effects of soaking and steaming conditions on the quality of *komal chawal* prepared by parboiling of chakua paddy, a low amylase variety, statistically designed experiments were carried. During the experimentation a fixed drying temperature was used, for which initially drying characteristics of parboiled paddy were determined by static bed and tray drying at 45°C, 55°C, 65°C. The drying data fitted to Page equation was used to estimate the drying time. Moisture content of paddy after steaming was found to be 0.7 kg/kg (db). The moisture content of brown rice was 14.31± 0.315 % and 15.11± 0.623% (db) for open and pressure steaming samples respectively. Response surface methodology was used for developing a response surface for the experimental levels taken in parboiling. The responses taken for the quality determination of *komal chawal* are: colour, chalkiness, and swelling rate constant as determined by image processing; rehydration ratio, textural properties. The colour and rehydration ratio were taken as the primary criteria for optimization, whereas other responses were fixed within ranges. In case of parboiling by open steaming, upon optimization of responses, for maximum rehydration ratio and having chalkiness percentage within acceptable limit, optimum values of soaking temp and soaking time, and open steaming time were obtained as is 30°C, 18h, and 45 min respectively. The optimized results were validated and the predicted and experimental values were found to be in close range. A comparison of open steaming and pressure steaming indicated a greater colour and rehydration ratio of pressure steaming samples as compared to the open steaming samples.

Keywords: *Komal chawal*, rehydration ratio, parboiling, colour value (ΔE), image processing.